The Effect of Learning Styles on Learning Outcomes of 4th Grade Elementary School Students

[1]Erry Yusuf, [1]Vera Yuli Erviana

Corresponding author: *vera.erviana@pgsd.uad.ac.id

[1] Universitas Ahmad Dahlan, Yogyakarta, Indonesia

ARTICLE ABSTRACT INFO

The main problem in this study is whether student learning styles influence the learning outcomes of fourth-grade students at SD Negeri Nogotirto. This type of research is quantitative or experimental research with a quasi-experimental design. The population in this study were fourth-grade students, and the sample of this study used a saturated sample using the total number of fourth-grade students at SD Negeri Nogotirto. Twenty-five students of class IVA and 25 students of class IVB. The instruments used in this study were a learning style questionnaire, pretest and posttest sheets of student learning outcomes. The results showed that the data analysis used descriptive and inferential analysis. The results showed that the inferential statistical analysis used the Independent sample t-test formula with the help of IBM SPSS Statistics 21 Software. The 2-tailed significance value was 0.043 <0.05, so based on the decision-making provisions, it can be concluded that H1 is accepted and H0 is rejected. It means that there is an influence of learning style on the learning outcomes of fourth-grade students of SD Negeri Nogotirto.

Introduction

Education is directed at fostering humans who carry out tasks independently so they can make decisions in their lives. To get it all, humans (students) must take an education that

includes a learning process. In the learning process, knowledge is transferred from a teacher to students or vice versa. Learning is a conscious effort from the teacher to be noble, healthy, knowledgeable, capable, creative, independent, and a democratic and responsible citizen.

Students have different abilities in receiving learning material and have their uniqueness and character. The essence is owned gives students different responses to understanding a lesson in terms of attitude or learning style [1]. The easiest way to learn is that students must know the learning style used.

Understanding each individual's learning style is essential in the learning process. It is intended so that teachers can facilitate learning in their classes according to the learning styles preferred by students. In the context of classroom learning, if the teacher teaches in a manner that is less attractive to students, students will feel uncomfortable. On the other hand, if teachers only teach using certain learning styles, then only some students like them. It can result in additional students being unable to develop the mental agility they need to excel in class or reach their professional potential [2]. Based on the results of observations in March - April 2020, there were several obstacles in the thematic learning process, such as students who were slow in the thematic learning process, students who were unable to remember and did not understand the material conveyed by the teacher, in addition to students who lacked active in learning, does not do the job well. Some students like to read while moving, and some prefer to learn by changing seats, such as through group study. Some students want to play while learning. For example, when the teacher explains in front of them, students are engrossed in playing alone, and some students look at their teacher seriously but are tested with questions the students cannot answer well.

Thematic learning is integrating material from several subjects into a learning theme or topic to provide a meaningful learning experience to students [3]. Thematic learning is learning that uses themes by combining several issues to deliver an experience for students. Thematic learning should be able to make students play an active role in the learning process. In education, prioritizing the development of creativity, personality, and student needs, as well as developing independence in seeking and finding knowledge during learning [4]. On the other hand, educators have changed their function to become facilitators and motivators for students, no longer the primary source of knowledge. So education must have a learning style according to the characteristics.

Learning style is an approach that explains how individuals learn or the ways taken by each to concentrate on the process and master complex and new information through different perceptions [5]. Each student has their learning style and distinguishes one student from. Learning style is a way students learn that has become a habit, and this habit is considered the most appropriate for them [6]. There are three types of learning styles based on the modalities

used by individuals in processing information, namely: Visual (seeing), auditory (hearing), and Kinesthetic (doing) Learning Styles. Individuals with a visual learning tendency prefer to see what is being learned. Symbols or pictures will help them to understand ideas or information better. Individuals who tend to have an auditory learning style enjoy listening to what others say. This learning style places hearing more as a means of absorbing information. Individuals with a kinesthetic learning style tend to be physically more physically involved in direct activities. They will learn if they get the opportunity to manipulate learning media.

In learning, students must achieve changes in behaviour after learning activities are formulated in learning objectives. Learning objectives are a form of hope communicated through statements describing the desired changes in students, namely ideas about what is expected in students after a learning experience. Learning outcomes, known as Bloom's taxonomy, are grouped into three aspects, namely, cognitive (knowledge), affective (attitude), and psychomotor (skill) aspects [7].

Based on the explanation of the factors that influence learning outcomes to come from within students (internal) and outside students (external). Teachers in the learning process must be able to pay attention to the conditions in themselves and the environment of the students [8]. By knowing the needs of the students and the student's atmosphere, the teacher can find out the deficiencies of the student's learning outcomes so that they can make the learning objectives easy to achieve. Thus, this study aimed to explain the influence of learning styles on learning outcomes in grade 5 students.

Method

The design of this study uses a type of quantitative research. This research is a way to test theoretical objectives by examining the relationship between several variables. Some of these variables can be measured, especially in some instruments, so data marked with a number can be analyzed using statistical procedures. This study uses experimental research methods with the design used is Quasi-Experimental Design. In this study, a treatment or *treatment* will be carried out to determine the effect of learning styles on student learning outcomes in class IV SD Nogotirto.

In addition, this study used the Nonequivalent Control Group Design. This design was chosen because, in this study, two groups were used: the experimental and the control groups. This design is almost the same as the pretest-posttest control group design, only in this design, the experimental and control groups are not randomly selected. This study used two research groups: the experimental and control groups. The two classes were given an initial test (pretest) and a final test (posttest). Learning styles were measured using a self-perception questionnaire with a Likert scale. Learning outcomes are measured using multiple-choice test questions.

Result and Discussion

The study results of 50 subjects were divided into class A as the experimental group, and class B as the control group. The researcher collected questionnaire data filled out by students in classes IVA and B. Scores were given to each question icon to analyse the data descriptively. Then the data is categorized into learning styles (visual, auditory, and kinesthetic). Each student's score will be added to see the learning styles' tendencies. It consists of *visual, auditory and kinesthetic learning styles*. The results of classifying student scores based on their learning style tendencies can be seen in Table 1.

Table 1. Student Learning Style

No	Learning style	Experiment Group		Control Group	
		Feq.	Percentage	Freq.	Percentage
1	Visual	7	28%	7	28%
2	Auditory	11	44%	13	52%
3	Kinesthetic	7	28%	5	20%
	Total	**25**	**100%**	**25**	**100%**

Based on the table above, there are 25 students in class IVA (experimental group). The number of students with a visual learning style tendency is seven, with a learning style percentage of 28%, 11 with an auditory learning style tendency of 44%, and seven with a learning style tendency of kinesthetic learning of 28%.

The table above shows the number of students with a visual learning style, namely seven people with a percentage of 28%, 13 students with an auditory learning style of 52%, and five with a kinesthetic learning style of 20% of the total data, namely 100%.

Normality Test of class IVA (experimental group) and IVB (control group) of SDN Nogotirto at pretest and posttest. The basis for decision-making for the normality test using the *Kolmogorov Smirnov* is that if the significance value is > 0.05, then the residual value is usually distributed, whereas if the sig value is <0.05 then the residual value is said to be not normally distributed. The significance value of the experimental and control groups on the pretest and posttest on the normality test showed a sig value of > 0.05. Because the Asymp sig value in the experimental group is 0.6 in the *pretest* and 0.5 in the *posttest,* and the Asymp sig value in the pretest control group is 0.9, then the posttest is 0.8 greater than the alpha value of 5% or 0.05, this shows a significant value in the group the experimental and control groups at the pretest and posttest are said to be normally distributed. The output of the homogeneity test is a significant number of 0.135 > 0.05, so it can be concluded that the data in this study are normally distributed.

Table 2. Test results of paired sample t-test

Paired	Means	std. Deviation	Q	Df	Sig. (2-tailed)
Pre_Post	-7,800	26,518	-2,080	49	0.043

Based on Table 2 above, the significance value is 0.043 <0.05. So it can be concluded that H1 is accepted and H0 is rejected. It means that there is an influence of learning styles on the learning outcomes of fourth-grade students at SD Negeri Nogotirto. Learning style is a way students learn that has become a habit, and this habit is considered the most appropriate for them [6]. Learning styles deemed appropriate for students are then repeated in every classroom lesson so that each student in the learning process can succeed. The initial step taken by researchers in conducting research is to collect observational data based on questionnaires and *pretests* before applying methods appropriate to student learning styles. After performing the pretest, the 25 samples in class IVA (experimental group) filled out the learning style questionnaire. Seven students (28%) tended to *visual learning styles*. There were 11 students (44%) who tended towards an *auditory* learning style. Seven students (28%) tended to have a kinesthetic learning style. It shows that the dominant learning style is owned by class IVA students at SD Negeri Nogotirto, the *auditory learning style* with the highest percentage, namely 44%.

In contrast to the results of the study in the control group, it was found that of the 25 total samples in class IVB, there were seven students (28%) who tended towards a visual learning style, there were 13 students (52%) who grew to have an auditory learning style and five students (20 %) who tend to have a kinesthetic learning style. So it can be concluded that class IVB is dominated by the Audio learning style, the same as in the experimental group.

From collecting these data, the researcher applied treatment to all students in the experimental group to make lesson plans with learning methods dominated by Auditory and Visual learning styles. It can happen because several things influence the emergence of learning styles. The emergence of learning styles is influenced by several things, including physical, emotional, sociological, and environmental factors [9]. The results of a study where there was a significant effect on student achievement after using the learning style method [10]. Aspects that support increased student learning are learning facilities, learning styles and students' interest in learning in the learning process.

The research results obtained from the two groups were dominated by two learning styles, namely auditory and visual. Other research found there is a significant influence between student achievement before (pretest) and after (posttest) using the auditory learning style method [11]. These results indicate that learning styles that match the characteristics of

students have a positive impact on the results of student achievement in this study included in learning outcomes

Student learning outcomes were monitored through the pretest process and continued with the posttest results, which were used as the final results in this quasi-experimental research. These results were obtained from the treatment of the experimental group by applying a learning style that was following the average grade IVB students. In contrast, the control group was not given treatment or treatment, so it could be seen that there was an influence between the suitability of student learning styles and the methods used by the teacher for further discussion about the research results on student learning outcomes, as explained below.

The research results show that the general learning outcomes of class IV (experimental group) at SD Negeri Nogotirto apply a learning style that suits the students. At the *pretest stage,* the highest score obtained was 100, and the lowest score obtained by students was 60. And at the posttest stage, the highest student score was 100, and the lowest score increased to 80. In addition, the average score at the *pretest stage* was 79 to 88 at the *posttest.* Whereas class IVB (control group), which was not given treatment, produced a pretest score with the highest score obtained by students, namely 100, and the lowest score was 0. It was still the same at the posttest stage, with the highest score of 100 and the lowest score of 0. The average value obtained by class IVB at the pretest stage, namely 56.4, experienced a slight increase to 62.4. After receiving the learning outcomes of all students as research subjects, grades IVA and IVB, they are then translated into a statistical test using the SPSS Version 20 application. Based on the results of the study shows that:

- there is a significant influence between student achievement before (pretest) and after (posttest) using the visual learning style method with a correlation coefficient value of 0.891,
- there is a significant effect between student achievement before (pretest) and after (posttest) using the auditory learning style method with a correlation coefficient value of 0.782
- there is a significant effect between student achievement before (pretest) and after (posttest) using the kinesthetic learning style method with a correlation coefficient value of 0.933.

From all the values of the correlation coefficient, it can be concluded that there is a significant difference between student achievement before (pretest) and after (posttest), using visual, auditory, and kinesthetic learning styles, which shows the influence of learning styles on student learning outcomes. The results of the inferential statistical analysis using the *Paired Sample T-test* obtained a significance value of 0.043 <0.05, so the learning style variable was

stated to have an effect on the learning outcomes of fourth-grade students at SD Negeri Nogotirto. By testing the hypothesis and obtaining these results, H0 is rejected, and H1 is accepted.

Conclusion

Based on the results of the research obtained and the discussion in the previous chapter, there is an influence between learning styles on the learning outcomes of fourth-grade students at SD Negeri Nogotirto. In the experimental group, in the pretest stage, the highest score obtained was 100, and the lowest score obtained by students was 60. In the posttest stage, the highest student score was 100, and the lowest score increased to 80. In addition, the average score in the pretest stage, namely 79, became 88 in the posttest stage. In the control group, the pretest score was obtained with the highest student score of 100 and the lowest score being 0. It was still the same at the posttest stage, with the highest score of 100 and the lowest score of 0. The average score obtained by class IVB at the pretest stage was 56.4 experienced a slight increase to 62.4. Inferential statistical data testing using the Paired Sample T-test, a significance value of 0.043 <0.05 was obtained so that the learning style variable was stated to have an effect on the learning outcomes of fourth-grade students at SD Negeri Nogotirto.

Conflict of Interests

The authors should declare that there is no conflict of interest.

References

[1] Moussa, N. (2014). The importance of learning styles in education. *Institute for Learning Styles Journal*, *1*(2), 19-27.

[2] Sadeghi, N., Kasim, Z. M., Tan, B. H., & Abdullah, F. S. (2012). Learning styles, personality types and reading comprehension performance. *English Language Teaching*, *5*(4), 116-123.

[3] Akrim, A., Nurzannah, N., & Ginting, N. (2020, February). Integrated Thematic Learning Program For Teachers Of Sd Muhammadiyah In The City Of Medan. In *Proceeding International Seminar Of Islamic Studies* (Vol. 1, No. 1, pp. 950-955).

[4] Demchenko, I., Maksymchuk, B., Bilan, V., Maksymchuk, I., & Kalynovska, I. (2021). Training future physical education teachers for professional activities under the conditions of inclusive education. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, *12*(3), 191-213.

[5] Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *The journal of economic education*, *31*(1), 30-43.

[6] Kolb, D. A. (2007). *The Kolb learning style inventory*. Boston, MA: Hay Resources Direct.

[7] Arievitch, I. M. (2020). Reprint of: The vision of Developmental Teaching and Learning and Bloom's Taxonomy of educational objectives. *Learning, culture and social interaction*, *27*, 100473.

[8] Rafiola, R., Setyosari, P., Radjah, C., & Ramli, M. (2020). The effect of learning motivation, self-efficacy, and blended learning on students' achievement in the industrial revolution 4.0. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(8), 71-82.

[9] İlçin, N., Tomruk, M., Yeşilyaprak, S. S., Karadibak, D., & Savcı, S. (2018). The relationship between learning styles and academic performance in TURKISH physiotherapy students. *BMC medical education*, *18*(1), 1-8.

[10] Han, J., & Yin, H. (2016). Teacher motivation: Definition, research development and implications for teachers. *Cogent education*, *3*(1), 1217819.

[11] Ningrat, S. P., Tegeh, I. M., & Sumantri, M. (2018). Kontribusi gaya belajar dan motivasi belajar terhadap hasil belajar Bahasa Indonesia. *Jurnal Ilmiah Sekolah Dasar*, *2*(3), 257-265.

Authors

1st Author – is a graduated student in the Elementaary School Teacher Education Study Program, Ahmad Dahlan University, Yogyakarta, Indonesia. (email: erryusufsaputra@gmail.com).

Vera Yuli Arviana is a lecturer at the Elementary School Teacher Education Study Program, Ahmad Dahlan University, Yogyakarta, Indonesia. Her research and community service activities are focused on the use of technology in elementary schools. She has many books and articles published in various reputable journals. (email: vera.erviana@pgsd.uad.ac.id).